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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I - NEW ENGLAND
5-YEAR REVIEW REPORT (TYPE 1A)
WELLS G&H SUPERFUND SITE (WOBURN, MASSACHUSETTS)

I. INTRODUCTION

A. Authority Statement

EPA Region I conducted this review pursuant to CERCLA section 121(c), NCP section 300.400(f)(4)(ii), and OSWER Directives 9355.7-02 (May 23, 1991), and 9355.7-02A (July 26, 1994). It is a statutory review. The purpose of a five-year review is to ensure that a remedial action remains protective of public health and the environment and is functioning as designed. This document will become part of the Site File. This review (Type 1a) is applicable to a site at which response is ongoing.

Additionally, this review fulfills EPA's obligation under Civil Action No. 91-11807MA, section VII. The Consent Decree reads as follows: "To the extent required by Section 121(c) of CERCLA, 42 U.S.C., Section 9621(c), and any applicable regulations, EPA shall review the remedial action at the Site at least every five (5) years after initiation of the remedial action to assure that human health and the environment are being protected by the remedial action implemented."

B. Site Characteristics

The Wells G & H Superfund Site covers approximately 330 acres in east Woburn, Middlesex County, Massachusetts. The Site includes the aquifer and land mass area located within the zone of contribution of the two former municipal drinking water wells known as Wells G & H. The boundaries of the Site are Route 128 to the north, Route 93 to the east, the Boston and Maine Railroad to the west, and Salem Street to the south. It is approximately 330 acres.

Wells G & H are located in the sand and gravel aquifer of the Aberjona River basin within the Mystic River watershed. The area surrounding the wells within the Site boundary is a mixed use area consisting of light industry, commercial businesses, industrial parks, residences, and recreational property. The area surrounding the Site is dominated by industrial and commercial property to the North, and residential property to the South.

The Aberjona River, which begins in Reading, Massachusetts, flows through the Site and eventually reaches the Mystic Lakes in Winchester. A substantial wetland area associated with the Aberjona River flood plain is located on either side of the River within the Site boundary.

Wells G & H were developed by the City of Woburn in 1964 and 1967, respectively. The wells, screened in the Aberjona River aquifer, are capable of supplying two million gallons of water per day. Wells G & H were initially intended to supplement previously existing supplies. Local officials estimate that 27-28% of the community's water supply was provided by Wells G & H. The remainder of the water supply was provided by seven wells located near Horn Pond south of Salem Street. These wells are located in a different aquifer from Wells G & H and are not affected by contamination present in the study area. Woburn currently uses the Horn Pond water as its major water supply.

In 1979, the Massachusetts Department of Environmental Protection (DEP), formerly the Massachusetts Department of Environmental Quality Engineering, prompted by a local disposal problem, tested the water supply from Wells G & H. Several chlorinated volatile organic compounds, including 1,1,1-trichloroethane (1,1,1-TCA), trans-1,2-dichloroethene, tetrachloroethene (PCE), and trichloroethene (TCE), were detected at concentrations ranging from 1 to 400 parts per billion (ppb). As a result of this sampling the wells were immediately shut down. Woburn then revived an existing agreement with the Metropolitan District Commission (now the Massachusetts Water Resources Authority or MWRA) to compensate for the lost water supply. The MWRA continues to supplement Woburn's water supply.

As a result of the contamination at Wells G & H, and disposal problems discovered at the Industriplex Superfund Site just north of Wells G & H, the United States Environmental Protection Agency (EPA, or the Agency) conducted a hydrogeologic investigation and groundwater quality evaluation of a ten square mile portion of east and north Woburn. This investigation was conducted in 1981. The purpose of the investigation was to determine the extent and degree of contamination in the aquifer, and to identify the sources of contamination. Based on the direction of groundwater flow, the areal extent of groundwater contamination, and property inspections, EPA identified the source areas for contamination at Wells G & H to be within a one square mile area surrounding the wells on either side of the River within the Site boundary. This one square mile area now approximates the Site boundaries.

The following five facilities have been identified as sources of contamination - W. R. Grace & Company, UniFirst Corporation, New England Plastics, Wildwood Conservation Corporation (also known as Beatrice), and Olympia Nominee Trust. Wells G & H, located in the center of these properties, were listed as a Superfund Site on the National Priorities List (NPL) on December 21, 1982.

In addition to the groundwater contamination, EPA identified soil contamination above target levels on the Wildwood, UniFirst, New England Plastics and Olympia properties. Specifically, EPA found the following: a mixture of VOCs, pesticides, polychlorinated biphenyls (PCBs), PAHs and lead on the Wildwood property; VOCs on the UniFirst property; PAHs on the Olympia property; and VOCs on the New England Plastics

property. Sediment samples were taken from the Aberjona River and its surrounding wetlands within the Site boundaries revealed contamination consisting of PAHs and metals such as arsenic, mercury and chromium. Finally, an area of sludge and debris was identified on the Wildwood property.

II. DISCUSSION OF REMEDIAL OBJECTIVES; AREAS OF NONCOMPLIANCE

A. Remedy as Specified in the ROD and ESD

On September 14, 1989, EPA issued a Record of Decision (ROD) that embodied the remedy selected for the first operable unit of the Site. The remedial action selected in the ROD consists of the following:

- Treatment of contaminated soil using in-situ volatilization on the Wildwood property;
- Excavation and on-site incineration of contaminated soils at the Wildwood, Olympia, New England Plastics and UniFirst properties;
- Treatment and/or disposal of the sludge and debris found on the Wildwood property in a manner to be determined during the design phase of the clean-up;
- And, extraction and treatment of contaminated groundwater separately at the five source area properties using pre-treatment for metals and an air stripper to remove contaminants, or an equally or more effective technology approved by EPA. The extraction systems will be designed to address the specific bedrock and/or overburden contamination at each source area property.

The selected remedy was developed to satisfy the following remedial objectives which guide the design of the remedy and to used to measure the success of the remedy. The objectives listed below are specific to the first operable unit, the source area properties,

The remedial objectives for contaminated soil at the five source areas of contamination at the Wells G & H site are as follows:

- Prevent public contact with contaminated soil above the cleanup levels;
- Stop the leaching of soil contaminants to the groundwater; and
- Protect the natural resources at the Site from further degradation.

EPA has identified site-wide cleanup goals for each of the chemicals of concern in soil. These goals satisfy the above objectives. The soil cleanup goals represent the concentrations that can remain in the soil and still be considered protective of public health.

The remedial objective for contaminated groundwater at the five source areas of contamination at the Wells G & H Site are as follows:

- Prevent the further introduction of contaminated groundwater from the source areas to the central area;
- Limit the further migration of contaminated groundwater off-site from the source areas.
- Restore the bedrock and overburden aquifers in the vicinity of the source areas to drinking water quality.
- Prevent public contact with contaminated groundwater above the cleanup levels.

The target groundwater cleanup levels are based upon the classification of the groundwater at the Site as a potential source of drinking water. Therefore, EPA has identified Maximum Contaminant Levels (MCLs) promulgated under the Safe Drinking Water Act as the cleanup goals to be applied to the Site groundwater within the aquifer. These goals satisfy the above objectives and are protective of human health and the environment.

On April 25, 1991, EPA issued an Explanation of Significant Differences (ESD) that explained three significant changes and one non-significant change from the remedial action that was to be undertaken at the Site and the remedial action set forth in the ROD. Those changes were as follows:

Significant Changes

- On-site incineration of soils at the Wildwood, New England Plastics, and Olympia properties was changed to off-site incineration;

- In-situ volatilization would be used on the UniFirst property rather than incineration; and

- A typographical error was corrected resulting in a more stringent target clean-up level for groundwater.

Other Non-Significant Change

- Groundwater extraction systems could be combined for the UniFirst and W.R. Grace properties.

The 1991 ESD provided for certain changes to the soil and groundwater remedy, but the overall remedy fundamentally remained the same: incineration and in-situ volatilization of contaminated soils, removal of sludge and debris, and extraction and treatment of groundwater at the source areas.

B. Status of Remedial Actions to Date

Operable Unit 1 - Source Area Properties

1. W.R. Grace & Co. - Conn. Property: Two integrated groundwater pumping and treatment systems went online at the W.R. Grace and UniFirst properties on September 30, 1992. The two extraction and treatment systems work in concert. The recovery system at W.R. Grace consists of 22 wells which pump groundwater from the unconsolidated deposits and upper bedrock. The normal pumping rate of this system is approximately between 5 - 8 gallons per minute. W.R. Grace has successfully completed their fifth year of operating a system to pump up water from the shallow aquifer. The groundwater is treated using hydrogen peroxide and ultraviolet light to remove the contaminants. Clean water is discharged from the system. In the last five years of operation, 45 pounds of total VOCs have been destroyed in 16 million gallons of water. All the contaminated soil identified has been removed from the property.

2. UniFirst Corporation Property: The groundwater recovery system on the UniFirst property (see W.R. Grace above) pumps groundwater from a single bedrock recovery well at approximately 45 gallons per minute. UniFirst has been operating a groundwater treatment system for five years also. This system pumps groundwater from deep below both the UniFirst and W.R. Grace properties. The groundwater is treated with ultraviolet light and hydrogen peroxide. In the five years of operation, 1177 pounds of TCE and PCE have been destroyed in 114 million gallons of groundwater.

   The most heavily contaminated soil was dug up and removed from the former UniFirst property. Low level VOC-contamination remains present in the soil at this time beneath the building and paved parking lot. UniFirst has refused to design the Soil Vapor Extraction system they had requested approval for prior to the 1991 ESD. They cite that DNAPL will continue to recontaminate the area that the SVE system would operate in. The Agency has agreed to re-examine this issue when the groundwater recovery system has been in operation longer.

3. Wildwood Conservation Corporation Property: Much of the contaminated soil have been removed from the Wildwood property. All the stumps, rubbish, sludge, debris and drums have been taken away. The remaining soil contamination is due to low level VOCs. Groundwater contaminated with VOCs remains. A treatment system to clean-up both the remaining soil and groundwater contamination began operation on May 6, 1998. The system includes groundwater extraction wells, air sparge wells, and soil vapor extraction wells. A cap covers the entire treatment

area. Catalytic oxidation is used to treat VOCs from both the groundwater and soil vapor.

4. New England Plastics Corporation Property: Low level VOC-contaminated soil and VOC-contaminated groundwater remain at the New England Plastics property. A soil vapor extraction and air sparging system began operation on February 2, 1998. It employs air sparge wells, soil vapor extraction wells and a cap, similar to the Wildwood system, to pull VOCs from the ground and into a treatment system that traps contaminants using activated carbon. New England Plastics needs to consider how to address the groundwater contamination at their property next.

5. Olympia Nominee Trust Property: The owners of this property never reached an agreement with EPA to clean up their property. Money had become available for EPA to begin fund-lead work onsite. EPA representatives have taken groundwater samples and surface soil samples. The groundwater data will be used to design a system to treat contaminated groundwater beneath the property. The limits of a small amount of contaminated soil will be confirmed by additional soil sampling at deeper depths.

   The property owners approached EPA in the Spring of 1999. They are currently in settlement discussions with the Agency. In return for a settlement agreement in which the owners would commit to completion of the remedial action, EPA would prepare a prospective purchaser agreement to allow the property to be sold. Settlement is expected by the Summer of 1999.

Operable Unit 2 - Central Area

Three OU1 PRPs agreed in the OU1 Consent Decree to perform the OU2 RI/FS. A Phase 1A Report was submitted in February 1994. The PRPs argued that due to the industrialized nature of the area, no further investigation should be required because the impacts to the Central Area aquifer were far greater than the scope of this Superfund Site. EPA disagreed with this position, however, the future use of the aquifer impacts the approach EPA would take in requiring additional work in the Central Area.

The goal is to clean the groundwater to the standards that are set for safe drinking water. These standards are set by the Commonwealth of Massachusetts and the Federal Government. EPA and MA DEP have an open dialogue with the City of Woburn regarding the future of the groundwater aquifer. The City considers Wells G&H closed, citing that the former Mayor destroyed the pump houses. The Commonwealth, however, views the Wells and the aquifer as an inactive but viable public water supply. This issue has contributed to EPA's decision to wait until the aquifer classification is resolved prior to EPA or the PRPs undertaking additional investigations. EPA also wants to evaluate

the impact of the cleanup of the source area properties on the Central Area aquifer as part of any additional work.

In the meantime, three small industrial properties within OU2, referred to as the southwest properties, are being evaluated separately from the contaminated aquifer. EPA is assessing the quantity and quality of data available with which a risk assessment could be based for each of the properties. It is anticipated a minor amount of additional data collection will allow these three risk assessments to proceed.

Operable Unit 3 - Aberjona River Study

Sediments in the river are contaminated with PAHs and metals. Data from March 1998 provides the remainder of the information needed to complete a risk assessment of the Aberjona River from Route 128 in Woburn to Sandy Beach at the Upper Mystic Lake in Winchester. The risk assessment will clarify what, if any, specific contaminants are posing a hazard to human health or the environment along the River. EPA is currently working to complete that risk assessment.

III. RECOMMENDATIONS

Continued operation of the groundwater extraction and treatment systems at the W. R. Grace, UniFirst and Wildwood properties is recommended and anticipated. Soil vapor extraction systems at Wildwood and New England Plastics will be evaluated each quarter to determine the effectiveness of their continued operation. Design of a groundwater extraction and treatment system will be begun at the New England Plastics property. Negotiations with the owners of the Olympia Nominee Trust property are being aggressively pursued. Risk assessments will proceed on the southwest properties and the Aberjona River. EPA will continue discussions with the City of Woburn and the Commonwealth of Massachusetts regarding the future of the aquifer and any additional remediation that might be necessary given its intended use.

IV. STATEMENT ON PROTECTIVENESS

I certify that the remedies selected for this Site remain protective to human health and the environment.

V. NEXT FIVE-YEAR REVIEW

The next five-year review will be conducted by September 30, 2002. This date is ten years from the day the groundwater pump and treat remedies commenced at the W.R. Grace and UniFirst properties. This remedial action start date is the most accurate historic date available with which to track periodic reviews.

Patricia L. Meaney, Director
Office of Site Remediation & Restoration

8/4/99
Date

December 2001
Clarification of the August 1999
Five Year Review for the
Wells G&H Superfund Site

Name of Site: Wells G&H Superfund Site
Woburn, MA

Description of Site:

The Wells G & H Superfund Site covers approximately 330 acres in east Woburn, Middlesex County, Massachusetts. The Site includes the aquifer and land mass area located within the zone of contribution of the two former municipal drinking water wells known as Wells G & H. The boundaries of the Site are Route 128 to the north, Route 93 to the east, the Boston and Maine Railroad to the west, and Salem Street to the south. It is approximately 330 acres.

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The Aberjona River, which begins in Reading, Massachusetts, flows through the Site and eventually reaches the Mystic Lakes in Winchester. A substantial wetland area associated with the Aberjona River flood plain is located on either side of the River within the Site boundary.

On September 14, 1989, EPA issued a Record of Decision (ROD) that embodied the remedy selected for the first operable unit of the Site. The remedy associated with the 1989 ROD addresses remediation of contaminated groundwater, soil, and sludge found at the five properties identified as sources of contamination at the Site. These five properties define the first operable unit of the Site. The remedy also calls for a study of the central aquifer area (OU2) to determine the most effective way of addressing contamination in the central area. The cleanup of the central area of the Site, as well as the contamination found in the sediments of the Aberjona River (OU3), will be addressed under future RODs.

The next Five Year Review for the Site is scheduled to be completed by early August 2004.

Purpose of Addendum:

The purpose of this document is to clarify the protectiveness statement provided in the August 4, 1999 Five Year Review for the Site in response to the recent Resources for the Future study.

Revised Protectiveness Statement:

The remedy at OU1 is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risk are being controlled. Remedies have not been selected for the central area of the Site (OU2) or for the Aberjona River (OU3). At the time of the 1999 Five Year Review, the remedial investigations/feasibility studies for OU2 and OU3 were, and are still, ongoing.

The five properties within OU1 are all within remedial design or remedial action. Two groundwater pump and treat/UV-chemical oxidation systems are in their 9th year of operation at separate properties. A combined pump and treat/air sparging/ soil vapor extraction system is in its fourth year of operation at a third property. The combined system operated for three years using catalytic oxidation and recently converted over to treatment with carbon adsorption. Another soil vapor extraction system successfully remediated soil at the fourth property. The need for implementing groundwater remediation at that site is being assessed in light of the source removal effected by the soil vapor extraction. In addition to the continuation of these remedial actions, fund-lead remedial design continues at the fifth property owned by a non-settling party. Negotiations for take-over of the remedial design/remedial action by the responsible party are ongoing.

The combined remedial investigations/feasibility studies for the Central Area (OU2) and the Aberjona River (OU3) are scheduled to be completed by January and June of 2003, respectively.

Mary E. Garren, Remedial Project Manager

12-26-01
Date